

## IN THE CLAIMS

1. (Currently Amended) Intervertebral linking device to connect at least two bones of the spine to one another, comprising:

at least one fixed element which is to be secured to a vertebra of the spine or to a sacrum of the spine,

at least one mobile linking element suitable for being displaced relative to each fixed element,

at least one intermediate element permitting the articulation of each mobile linking element relative to the at least one fixed element at least at the times of assembly and implantation in the bone,

wherein each intermediate element is received in an internal volume of a corresponding one of the at least one mobile linking element, or of a corresponding one of the at least one fixed element, the intermediate element being deformable to be placed into the internal volume by impaction,

and wherein the at least one fixed element, or the at least one mobile linking element, is received at least partially in an internal volume of the intermediate element having a mutual position of use with three degrees of freedom in rotation at least at the times of assembly and implantation in the bone relative to the intermediate element while remaining linked in translation and a mutual position of introduction in which the corresponding one of the at least one fixed element, or the corresponding one of the at least one mobile element, has three degrees of freedom in rotation and in translation relative to the intermediate element at least at the times of assembly and implantation in the bone.

2. (Previously Presented) The device according to claim 1, wherein the intermediate element assumes the form of a cup.

3. (Previously Presented) The device according to claim 2, wherein the internal volume of the intermediate cup is bordered by a truncated spherical surface.

4. (Previously Presented) The device according to claim 3, wherein the intermediate cup has a truncated spherical external surface, which is concentric with the internal surface.

5. (Previously Presented) The device according to claim 4, wherein the internal surface and the external surface define a wall of the intermediate cup.

6. (Previously Presented) The device according to claim 5, wherein the thickness of the wall is from 1 to 1.5 mm.

7. (Previously Presented) The device according to claim 1, wherein the intermediate element is produced from polyethylene.

8. (Previously Presented) The device according to claim 1, wherein said internal volume is at least part spherical having an internal diameter, and said internal volume has an opening with a width smaller than said internal diameter, and wherein said intermediate element has an external diameter that is substantially the same as said internal diameter of said internal volume,

such that when said intermediate element is inserted into said internal volume, said opening prevents said intermediate element from falling out of said internal volume.

9. (Previously Presented) The device according to claim 1, wherein said intermediate element has an internal volume having an internal diameter and an opening to said internal volume having a width less than said internal diameter, and said fixed element has a spherical head with an equatorial flat portion, said spherical head having a diameter between spherical surfaces that is substantially the same as said internal diameter, and said equatorial flat portion has a diameter that is substantially equal to said width of said opening.

10. (Previously Presented) The device according to claim 9, wherein said fixed element is a screw having a shaft with a longitudinal axis, and said flat surfaces do not intersect said axis.

11. (Previously Presented) The device according to claim 1, wherein said linking member is separated from at least one of the bones by the at least one fixed element.

12. (Currently Amended) An orthopedic surgical apparatus for connection to two adjacent vertebrae, comprising:

an elongated link member having a first end and a second end and a body extending between said ends, said first end having an upper surface and a lower surface and an internal volume bordered by walls forming a portion of a sphere, said internal volume terminating in an upper opening in said upper surface and a lower opening in said lower surface, said internal

volume having a diameter, and said lower opening having a width that is smaller than said diameter of said internal volume;

a socket member made of a material that is resiliently deformable, said socket member having an external surface that is a portion of a sphere having a diameter substantially the same as said diameter of said internal volume, said socket member further having an internal surface that forms a portion of a spherical internal volume having an internal diameter, a base portion with an orifice through it and communicating with said internal volume of said socket member, and an opening opposite said base portion having a width that is smaller than said internal diameter of said socket member; and

a screw having a head and a threaded shaft, said shaft extending along a longitudinal axis, said head being spherical and including an equatorial flat portion, said head having a first diameter between spherical portions and a second diameter between parts of said equatorial flat portion that is less than said first diameter, said first diameter being substantially the same as said internal diameter of said socket member, and said second diameter being substantially the same as said width of said socket member opening,

wherein said socket member is inserted into said internal volume of said first end of said linking member, said socket being rotatable at least at the times of assembly and implantation in bone within said first end with three degrees of freedom but is prevented from falling out of said first end, and said screw head is inserted into said internal volume of said socket member, said screw head being rotatable at least at the times of assembly and implantation in bone within said socket member with three degrees of freedom but is prevented from falling out of said socket member.

13. (Previously Presented) The apparatus of claim 12, wherein said equatorial flat portion is in a plane that is not perpendicular to said shaft axis of said screw.

14. (Previously Presented) The apparatus of claim 12, wherein said socket member has an original shape, and said socket member deforms when inserted into said first end, and resumes said original shape when within said internal volume of said first end.

15. (Previously Presented) The apparatus of claim 12, wherein said screw head includes a hole in said equatorial flat portion, and further comprising a stop inserted in said hole so that a portion of said stop extends above said equatorial flat portion.

16. (Previously Presented) The apparatus of claim 15, wherein said stop is a set screw.

17. (Previously Presented) The apparatus of claim 12, wherein said second end has an upper surface and a lower surface and an internal volume bordered by walls forming a portion of a sphere, said internal volume of said second end terminating in an upper opening in said second end upper surface and a lower opening in said second end lower surface, said internal volume of said second end having a diameter, and said second end lower opening having a width that is smaller than said diameter of said internal volume of said second end;

a second socket member made of a material that is resiliently deformable, said second socket member having an external surface that is a portion of a sphere having a diameter substantially the same as said diameter of said internal volume of said second end, said second socket member further having an internal surface that forms a portion of a spherical internal

volume having an internal diameter, a base portion with an orifice through it and communicating with said internal volume of said second socket member, and an opening opposite said second socket member base portion having a width that is smaller than said internal diameter of said second socket member; and

a second screw having a head and a threaded shaft, said shaft extending along a longitudinal axis, said head being spherical and including an equatorial flat portion, said head having a first diameter between spherical portions and a second diameter between parts of said equatorial flat portion that is less than said first diameter, said first diameter being substantially the same as said internal diameter of said socket member, and said second diameter being substantially the same as said width of said socket member opening,

wherein said socket member is inserted into said internal volume of said first end of said linking member, said socket being rotatable within said first end with three degrees of freedom but is prevented from falling out of said first end, and said screw head is inserted into said internal volume of said socket member, said screw head being rotatable within said socket member with three degrees of freedom but is prevented from falling out of said socket member.

18. (New) The device of claim 9, wherein said spherical head has an equator of greatest diameter and said equatorial flat portion passes through said equator.

19. (New) The device of claim 12, wherein said spherical head has an equator of greatest diameter and said equatorial flat portion passes through said equator.

20. (New) The device of claim 9, wherein said fixed element has a longitudinal axis and said equatorial flat portion resides in a plane oblique to said longitudinal axis.